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PART 2

*Your attention is invited*

**NEWS  
OF THE  
ENGINEERING  
MECHANICS  
DIVISION  
OF  
ASCE**



**JOURNAL OF THE ENGINEERING MECHANICS DIVISION  
PROCEEDINGS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS**



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## DIVISION ACTIVITIES

### ENGINEERING MECHANICS DIVISION

#### Proceedings of the American Society of Civil Engineers

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#### NEWS

October, 1961

#### CHAIRMAN'S ANNOUNCEMENT

It is a pleasure to report to the membership of the EMD on the activities of a busy year.

For the second consecutive year, our Journal was published bimonthly. A healthy supply of papers for future publications of the Journal is on hand. However, because six Journals per year are now published we can offer quick publication of the material. Moreover, the period of review of all the papers by the technical committees has been cut to a mere one month.

In addition to the substantial number of papers published in the Journal, two ASCE manuals were published. Our Committee on Plasticity completed an important task by issuing a "Commentary on Plastic Design in Steel" as ASCE Manual 41. Also, the Committee on Structural Dynamics completed its arduous task, and now ASCE Manual 42 on "Design of Structures to Resist Nuclear Weapon Effects" is now published.

On May 18 and 19, 1961, the Division held an Engineering Mechanics conference at R.P.I. in Troy, New York with a registered attendance of 57. Another conference on Applied Mechanics was co-sponsored with the ASME Applied Mechanics Division in Seattle, Washington on August 28-30, 1961 with an attendance of approximately 200 people. In addition to this, for the annual convention, October 16-20, 1961, the Division will participate in five technical sessions. Large attendance is anticipated for the session on "Research in Civil Engineering."

Plans for special Division conferences in 1962 and 1963 have already been formulated. The April 1962 conference at the University of Texas has been particularly firmly established.

The above work was carried out with the initiative and planning of the four Administrative Committees of the Division, whereas the technical aspects of publications and programs have been performed by eight of the Division's Technical Committees. In the latter category, a new committee on Stability has been authorized, and the membership of this committee is now being organized.

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The Division's Advisory Board has again nominated outstanding individuals for the Society's research prizes. The Division's von Karman award this year has been given to Professor Raymond Mindlin of Columbia University.

Two significant changes in the Division's administrative personnel occurred during the year. Dr. Edward Wenk, Jr. had to resign his post of the Division Secretary since he has been appointed to a very demanding position of a technical assistant to Dr. J. B. Wiesner, special assistant to President Kennedy for science and technology. In his new professional capacity, Dr. Wenk will also serve as Executive Secretary of the Federal Council for Science and Technology. Professor Donald Dean who has been EMD's Newsletter Editor is our new secretary. The post of Newsletter Editor, which he vacated, has been filled by Professor Martin R. Brown, Jr. of R.P. I.

The large amount of work which was performed by the Division committees was, of course, only possible because of the conscientious, selfless support from the people on these committees for which I wish to express my sincere appreciation and gratitude.

E. P. Popov, Chairman  
EMD Executive Committee

#### FORTHCOMING MEETINGS OF INTEREST

October 16-20, 1961 - Hotel Statler, New York, New York

ANNUAL CONVENTION, ASCE, The following is the latest (Sept. 15) information on scheduled technical sessions in which the EMD is directly involved:

##### Monday, October 16

Morning session - Theme: STRUCTURAL DYNAMICS

Presiding: Merit P. White, University of Massachusetts

9:15 a.m. - RAYLEIGH WAVE EFFECTS DUE TO A NUCLEAR BLAST ON AN ELASTIC HALF SPACE

Melvin L. Baron, Paul Weidlinger Associates, and Charles Lecht, 2nd Lieutenant, U. S. Army

9:45 a.m. - STATIC AND DYNAMIC TESTS OF PORTAL FRAME KNEE CONNECTIONS

Warren A. Shaw, U. S. Naval Civil Engineering Laboratory

10:15 a.m. - DYNAMIC RESPONSE OF CONTINUOUS HIGHWAY BRIDGES

Tseng Huang, University of Illinois, and A. S. Veletsos, University of Illinois

Afternoon session - Theme: PLASTICITY

Presiding: William J. Hall, University of Illinois, and Robert M. Haythornthwaite, University of Michigan

2:00 p.m. - THE POST-BUCKLING STRENGTH OF WIDE-FLANGE BEAMS

George C. Lee, University of Buffalo, and Theodore V. Galambos, Lehigh University

- 2:30 p.m. - ANALYSIS OF FRAMES LOADED INTO THE PLASTIC RANGE  
Morris Ojalvo, Ohio State University, and Le-Wu Lu, Lehigh University
- 3:00 p.m. - EXPERIMENT AND THEORY ON YIELDING AT VARYING LOAD RATES  
Anthony M. DiGiola, Carnegie Institute of Technology, and E. D'Appolonia Associates, and Ralph G. Crum, Aeronutronics Division of Ford Motor Company
- 3:30 p.m. - RANGE OF THE YIELD CONDITION IN STABLE, IDEALLY PLASTIC SOLIDS  
Robert M. Haythornthwaite, University of Michigan

Tuesday, October 17

Morning session, sponsored jointly with the Structural Division

Theme: **TEACHING OF MATERIALS**

Presiding: Clyde E. Kesler, University of Illinois, and Robert D. Dewell, Consulting Engineer, San Francisco, California

- 9:00 a.m. - Keynote address: SIGNIFICANT ASPECTS OF MATERIALS BEHAVIOR  
J. M. Frankland, National Bureau of Standards Discussion
- 10:00 a.m. - MECHANICAL BEHAVIOR OF ENGINEERING MATERIALS  
Joseph Marin, Pennsylvania State University
- 10:20 a.m. - STRUCTURAL DESIGN AS A PATTERN FOR MATERIALS INSTRUCTION  
Lawrence H. Van Vlack, University of Michigan
- 10:40 a.m. - MECHANICAL BEHAVIOR OF SOLIDS  
Herbert T. Corten, University of Illinois
- 11:00 a.m. - Discussion

Afternoon session, sponsored jointly with the Structural Division

Theme: **A REAPPRAISAL OF ANALOG COMPUTATION**

Presiding: D. Whitman, Jr., Consulting Engineer, Pasadena, California, and John E. Goldberg, Purdue University

- 2:30 p.m. - WHAT IS AN ANALOG COMPUTER?  
M. S. Brull, University of Pennsylvania
- 3:05 p.m. - PASSIVE ANALOG COMPUTERS FOR STRUCTURAL ANALYSIS  
R. H. MacNeal, Computer Engineering Associates, Inc.
- 3:50 p.m. - ACTIVE ANALOG COMPUTERS FOR STRUCTURAL AND ENGINEERING MECHANICS PROBLEMS  
Robert Howe, University of Michigan
- 4:25 p.m. - PANEL DISCUSSION

Thursday, October 19

Afternoon session, 2:15 p.m. - Theme: RESEARCH IN CIVIL ENGINEERING

Presiding: Robert J. Hansen, Massachusetts Institute of Technology  
RELATIONSHIP OF RESEARCH AND CIVIL ENGINEERING TO NATIONAL GOALS

Edward Wenk, Jr., Federal Council for Science and Technology  
THE IMPACT OF RESEARCH ON ENGINEERING

Godron S. Brown, Massachusetts Institute of Technology  
THE ROLE OF A.S.C.E. IN SUPPORTING RESEARCH

Elmer K. Timby, Howard, Needles, Tammen and Bergendoff  
PLANS OF THE RESEARCH COMMITTEE, A.S.C.E.

Nathan M. Newmark, University of Illinois

Friday, October 20

Afternoon session - Theme: TURBULENT DIFFUSION

Presiding: Jack E. Cermak, Colorado State University, and Gerald T. Orlob, University of California

2:00 p.m. - THE EXPERIMENTAL RELATION BETWEEN TURBULENT DIFFUSION AND HOT-WIRE ANEMOMETER MEASUREMENTS

L. V. Baldwin, Colorado State University, and W. R. Mickelson, National Aeronautics and Space Administration

2:30 p.m. - THE MIXING OF A TURBULENT WALL JET INTO A UNIFORM FREE STREAM

S. Eskinazi, Syracuse University

3:00 p.m. - SCALE FACTORS IN SIMULATING SNOW IN A WIND TUNNEL  
Fuat Odar, U. S. Army SIPRE

3:30 p.m. - TURBULENT DIFFUSION IN A VARIABLE DENSITY FLUID

Donald R. F. Harleman, Massachusetts Institute of Technology, and D. W. McDougall, Iowa Institute of Hydraulic Research

Civil Engineering will carry the full convention program and should be consulted for additional particulars.

Attention is called to the first EMD session on Research which is to be held on Thursday afternoon.

October 29-31, 1961 - Illinois Institute of Technology, Chicago, Illinois

INTERNATIONAL SYMPOSIUM ON PHOTOELASTICITY, sponsored by Illinois Institute of Technology, Office of Ordnance Research-U.S. Army, National Science Foundation, Society for Experimental Stress Analysis, Office of Naval Research, Office of Scientific Research-U.S. Air Force, Applied Mechanics Division of ASME, and the Chicago Sections of SESA, ASME, and ASCE. The full program may be obtained upon request to Illinois Institute of Technology. To register in advance please fill out and return the form given at the end of the Newsletter.

April 26-27, 1962 - University of Texas, Austin, Texas

**SPECIAL EMD CONFERENCE.** The tentative program includes two sessions under the general topic **ELASTICITY**, two under **FLUID DYNAMICS**, one under **PLASTICITY**, and one under the new title **STABILITY**. The Newsletter will carry detailed information on this meeting in future issues. Professor Walter L. Moore, Department of Civil Engineering, University of Texas, Austin, Texas is handling general arrangements for EMD.

June 18-21, 1962 - University of California, Berkeley, California

**FOURTH U.S. NATIONAL CONGRESS OF APPLIED MECHANICS**, under the auspices of the U. S. National Committee on Theoretical and Applied Mechanics, a joint committee of the American Institute of Chemical Engineers, the American Mathematical Society, the American Physical Society, ASCE, ASME, the Institute of the Aerospace Sciences, and the Society for Experimental Stress Analysis. The Editorial Committee has invited research workers to submit papers for possible presentation at the Congress. Such papers must be submitted by January 1, 1962 (preferably earlier). Further information is available in the June 1961 EMD Newsletter or the June 1961 Structural Division Newsletter or from: W. Goldsmith, Applied Mechanics, University of California, Berkeley 4, California.

August 27 - September 1, 1962 - Munich, Germany

**INTERNATIONAL FEDERATION OF INFORMATION PROCESSING SOCIETIES CONGRESS.**

The Congress will cover all aspects of Information Processing and Digital Computers including the following:

**BUSINESS INFORMATION PROCESSING** (data processing in commerce, industry, and administration).

**SCIENTIFIC INFORMATION PROCESSING** (numerical analysis, calculations in applied mathematics, statistics, and engineering; data reduction; problems in operations research).

**REAL TIME INFORMATION PROCESSING** (reservation systems; computer control; traffic control; analog-digital conversion).

**STORAGE AND RETRIEVAL OF INFORMATION** (memory devices; library catalogues).

**LANGUAGE TRANSLATION AND LINGUISTIC ANALYSIS**

**DIGITAL COMMUNICATION** (encoding; error detecting and error correcting codes for digital data transmission).

**ARTIFICIAL PERCEPTION AND INTELLIGENCE** (pattern recognition; biological models; machine learning, automata theory).

**ADVANCED COMPUTER TECHNIQUES** (logical design; logical elements, storage devices; ultra high-speed computers; program techniques; ALGOL).

**EDUCATION** (selection and training of computer specialists; training of non-specialists in the use of computers; information processing as a University subject).

**MISCELLANEOUS SUBJECTS** (growth of the information processing field).



In each category it is planned to cover, where appropriate, the application of digital computers, programming, systems design, logical design, equipment, and components. Further details are available from Dr. E. L. Harder, Westinghouse Electric Corporation, East Pittsburgh, Pennsylvania.

### EMD ACTIVITIES

The Committee on Fluid Dynamics reports a growing interest in this field, as evidenced by the increase in the number of papers submitted for review during the past year. Ten papers have been or are in the process of review, a two and one-half fold increase.

The Committee on Publications notes that two manuals of engineering practice have been published during the past year. They are Manual No. 41, Commentary on Plastic Design and Steel, under the guidance of the Committee on Plastic Design in Steel, and Manual No. 42, Design of Structures to Resist Nuclear Weapons Effects, under the guidance of the Committee on Structural Dynamics.

### TO BE NOTED

The recent award, by the American Society for Engineering Education, of the Vincent Bendix Award to Dr. Nathan M. Newmark, University of Illinois, for "outstanding contributions in research" and for "leadership in developing a great research facility."

Dr. Jacques W. Delleur, Purdue University, has been appointed ASCE Freeman Fellow for a year's study in the Fluid Mechanics Laboratory of the University of Grenoble, France.

Dr. Jack E. Cermak, Colorado State University, will also be abroad for a year's study in fluid mechanics, but as a NATO Postdoctoral Fellow. Dr. Cermak will be at Cambridge University.

### WE SOLICIT. . . .

Short technical notes, to be processed in the same manner as longer papers, for publication in the EMD Journal.

Editorial comment for inclusion in the EMD Newsletter.

News of appointments, honors, or awards, ASCE or not, affecting persons in the field of engineering mechanics. A hasty sentence on post card will do, really.

Information on forthcoming meetings of possible interest to the EMD membership.

Any other news concerning engineering mechanics. Deadline for items to be included in the December Newsletter: November 13.

Mail any of the above items to: Professor Martin R. Brown, Jr., Department of Civil Engineering, Rensselaer Polytechnic Institute, Troy, New York.

### TO ASCE MEMBERS OF CHI EPSILON

Chi Epsilon Fraternity, national civil engineering honor society, has officially offered to supply the funds necessary to furnish a formal Conference



Room at the United Engineering Center. This room will be on the ASCE executive floor, will be named "The Chi Epsilon Room," and will be available for conference and committee meetings.

Pledges are not expected, but single voluntary gifts, from members and friends of the Fraternity are earnestly solicited. An attractive Commemoration Book has been planned in which donors of \$100 or more (singly or in groups) may inscribe the name of a revered person.

On request, the national chairman, Samuel Kramer (8701 Shore Road, Brooklyn 9, New York) will be glad to mail a descriptive brochure. Your gift is tax deductible if you make your check out to "ASCE CHI EPSILON ROOM FUND" and mail it to Mr. Donald D. King, ASCE, United Engineering Center, 345 East 47th Street, New York 17, N. Y. Your gift will be automatically credited to the quota of your initiating Chapter. The national goal is \$10,000; as of September 21, \$8,595 has been collected.

#### NEW ASCE TRANSACTIONS SOON TO GO TO PRESS

In mid-May all Society members received a brochure describing the re-vamping that the TRANSACTIONS are undergoing. Since that time thousands of orders have been received, but still more should have reached us.

Beginning with Volume 126 (1961), TRANSACTIONS will be issued as a standard set of five parts, containing all Division Journal papers, according to the following schedule:

- Part I Engineering Mechanics, Hydraulics, Soil Mechanics and Foundations
- Part II Construction, Structural
- Part III Irrigation and Drainage, Power, Sanitary Engineering
- Part IV Air Transport, City Planning, Highway, Pipeline, Surveying and Mapping, Waterways and Harbors
- Part V Professional Practice

Members of ASCE can enter standing orders to any one, or more, of Parts I through IV at \$3.50 each per year; the price for Part V will be \$2.00 per year. Members can effect a considerable saving by subscribing to all five parts—the total price of \$16.00 is reduced to \$10.00.

Part V is reserved for the papers published in the Journal of Professional Practice, which is of interest to all members, regardless of their technical specialties. Part V will also contain the President's Annual Address, abstracts of the memoirs of deceased members, Final Reports of Committees in the Department of Conditions of Practice, and combined subject and author indexes for Parts I through V.

A single binding has been selected, more attractive and durable than the paper, cloth, and morocco-grained covers used in the past. This binding will be in the Society's official Royal Blue, composed of cloth impregnated with vinyl. The spine will contain horizontal rules to match those used previously on the morocco-grained volumes. The binding and gold stamping will resist fading and will not deteriorate in warm, moist climates.

The TRANSACTIONS will be mailed in December of each year and the bills will be sent out at that time.

Please use the following coupon to place your order. Do not send in a coupon if you previously mailed the original order card.

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**ASCE MANUAL NO. 42—DESIGN OF STRUCTURES TO RESIST  
NUCLEAR WEAPONS EFFECTS**

As a project of the Committee on Structural Dynamics of the Engineering Mechanics Division, through its Manual Subcommittee this Manual (No. 42) has been in preparation for several years. It was written for use of the engineering profession in the design of structures which are intended to be resistant in some degree to all of the effects associated with the detonation of a nuclear weapon. Copies of this paper-bound Manual can be obtained by completing the accompanying coupon. The list price is \$4.00 and ASCE members are entitled to a 50% discount.

ASCE

Engineering Mechanics Division

1961-40--9

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Please send me \_\_\_\_\_ copies of Manual 42, Enclosed is my remittance of  
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1961-40--10

EM 5

October, 1961

Upon completing this form, mail it with your check to:

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